OXCART Progress Report

29 December 1959

OXC-0208-60
COPY 2 OF 3

Dear Dick:

PROGRESS REPORT #4

During the month of December, a considerable amount of progress was made on the design of the A-12 aircraft. Because we had a suppliers' meeting Dec. 16th and 17th, I think you are quite current on the status of most items normally covered in the progress report. I will, therefore, make this one fairly brief.

1. High speed wind tunnel tests are well under way, with very gratifying results to this point. It appears that the basic performance and stability estimates will be met or slightly exceeded. I do not have actual copies
25X1D of the [redacted] tests available to attach, but will bring these data with me for our meeting on January 19th. We are proceeding rapidly with 25X1A13c the inlet duct model and have started the temperature survey model for tests at Langley Field, [redacted]
25X1A13c
nel tests there. I cannot speak too highly of the excellent cooperation we obtained from the Moffet Field group, as a whole.

2. Construction of the nose section of the aircraft, to study problems of tooling and construction and handling of titanium, is proceeding as fast as our limited material supply allows. We are having good luck making the various pieces, but the tooling required is considerably more sophisticated than we have previously used. We are having to heat the tooling to bend the material properly. Installation of our special heat treat furnaces and various treating tanks is proceeding rapidly, with completion expected about the middle of January. We have found several materials to coat the pieces during heat treatment which seem to successfully solve the problem of heat treating in air without requiring
25X1A5a1 argon furnaces, which would be extremely expensive. We have placed the order [redacted] for enough material for the first aircraft, as discussed in our suppliers' meeting in Florida.

25X1A 3. I am sure you are up-to-date on the work at the [redacted] in regard to the A.R. aspects of the program. Due to a failure of the rotating mechanism, certain tests had to be undertaken which were not of the highest priority, while the equipment was repaired. The rate of testing has now been speeded up by a factor of about three, due to increasing the rate of rotation and raising and lowering the model. It appears that the very difficult problem of suppressing the return from the aft section of the aircraft has been successfully solved over the required frequency range.

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[redacted]

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4. Plastic materials, particularly samples furnished by [redacted] are showing up well in structural tests here. While these materials are considered usable to temperatures of 500° to 550°F, tests will be continued to higher temperatures.

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5. A purchase order is being written [redacted] to cover costs incurred to date and future development, to a nominal degree. We are working with them to reduce the capital equipment required, to insure a fail-safe design of the inlet control, and to see if we cannot make their test stands, which are required for development, usable in the field for ground equipment. We have asked them to come up with a proposal requiring less capital equipment and considerably lower overall cost.

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6. We are expecting a visit today by the [redacted] people, to discuss the autopilot and stabilization gear.

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7. After considerable discussion with [redacted], and a full evaluation of what it would mean to LAC to have [redacted] build the ejectors, we have jointly agreed that this should be done by LAC to an aerodynamic configuration agreed upon with [redacted]. Upon investigation of the cost quotations for an equal number of units, our costs turn out to be slightly less than [redacted] although our initial cost for one unit is substantially higher. I would propose that we do not make the ejector an item requiring spares, except for removable parts, and that we build only 26 of them, considering it to be an integral aircraft part. We should, of course, submit one or two units to [redacted] for qualification at the earliest possible time.

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8. As a result of the above discussions [redacted] it also appears logical and desirable to have them design, build and test the accessory gear box and drive shaft.

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9. Actual progress on the air conditioning system has not been made, as we do not yet have clearances for complete discussions with [redacted] We were likewise told by John that you may wish to have [redacted] bid on the same gear for competitive reasons, but this has not yet been confirmed to us. Until we are ad vised, we will continue to deal with [redacted] hoping to get early clearances for their engineering personnel, so that they can undertake some design studies on the actual gear.

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10. The basic structural design is proceeding well. There are major problems in trying to get a consistent design which can later extend the speed range to [redacted] There are many unknowns in the field of service life of different components at the high temperatures. We are proceeding according to a memo,which you have, outlining our design philosophy, but it is evident that a total aircraft life must be estimated. For design purposes, we are following the policy outlined in the attached memo. Wing tank sealants, electrical wiring insulation, canopy rubber seals, etc., will pose major problems in terms of obtaining satisfactory service life. As we have discussed before, I think that the bookkeeping that it will be necessary to have to record times on various components and overhaul procedures will be far beyond anything we have faced to date. A single base operation certainly will do much to simplify problems associated with the above.

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11. In a visit [redacted] we were very much impressed by the simplicity of their approaches to the design of the special packages, compared to others to which we have been exposed. The availability of special test equipment to evaluate problems of altitude and temperature was very gratifying.

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12. I was asked by John and [redacted] to separate the financial report from the basic progress report. I am herewith complying, so that you may distribute this information separate from the technical contents of the progress report.

Sincerely,

cc: J. P.
G. K.